Central Valley Regional Water Quality Control Board
5 February 2009 Board Meeting

Response to Comments
for the
San Andreas Sanitary District
Wastewater Treatment Plant
Tentative Waste Discharge Requirements

The following are Regional Water Quality Control Board, Central Valley Region (Regional Water Board) staff responses to comments submitted by interested parties regarding the tentative Waste Discharge Requirements (National Pollutant Discharge Elimination System or NPDES Permit renewal) for the San Andreas Sanitary District Wastewater Treatment Plant. Public comments regarding the proposed Order were required to be submitted to the Regional Water Board by 5:00 p.m. on 12 January 2009 in order to receive full consideration.

The Regional Water Board received comments regarding the proposed NPDES Permit renewal by the due date from the San Andreas Sanitary District (Discharger) and the California Sportfishing Protection Alliance (CSPA). The submitted comments were accepted into the record, and are summarized below, followed by Regional Water Board staff responses.

SAN ANDREAS SANITARY DISTRICT (DISCHARGER) COMMENTS

Discharger Comment No. 1. Dilution Credits for Protection of Aquatic Life

The Tentative Order contains a prohibition of discharges of secondary treated effluent to the North Fork Calaveras River which do not receive a minimum of 20:1 dilution as a daily average. However, dilution credits were not allowed in the derivation of water quality based effluent limits for the protection of aquatic life. The Tentative Order indicates that the edge of the mixing zone in the North Fork Calaveras River has not been adequately defined by the District in the San Andreas Sanitary District Dilution/Mixing Zone Study or subsequent Dilution/Mixing Zone Study Evaluation prepared and submitted in response to a Water Board staff request. To better define the edge of the mixing zone and describe how mixing zone conditions specified in Section 1.4.2.2 of SIP are satisfied, the District has prepared a Dilution/Mixing Zone Study addendum, included as Attachment B to this letter. The District proposes that the Water Board consider the information presented in Attachment B and apply ,the appropriate dilution credits (D=19) for water quality based effluent limits for copper, cyanide, zinc, ammonia and diazinon.

As a result of allowing dilutions credits in the determination of water quality based effluent limits for the protection of aquatic life, the District be able to immediately comply with effluent limits for copper, cyanide, zinc, ammonia and diazinon, as show in Table I above, thus

1) Eliminating the need for these parameters to be included in the Tentative Time Schedule Order,

2) The requirement of interim limits for any of these parameters to be included in the Tentative Order, and
3) The requirement for the District to develop and implement pollution prevention plans for these parameters.

With a dilution ratio of 20: 1, a numeric toxicity limit of > 1 TUc is no longer appropriate. The District proposes that the numeric toxicity monitoring trigger be set at 10 TUc for consistency with precedent set in recently adopted Central Valley Water Board orders that allow dilution credits (e.g., Town of Discovery Bay).

RESPONSE: The Discharger conducted a Dilution/Mixing Zone Study in April 2004. On 29 July 2008, the Regional Water Board requested the Discharger to further evaluate the mixing in the North Fork Calaveras River using the USGS mixing model equation and the data provided in the Dilution/Mixing Zone Study. The Discharger submitted an evaluation of the Dilution/Mixing Zone Study on 25 August 2008. Based on the Discharger's Dilution/Mixing Zone Study, dilution credits for compliance with human health criteria were allowed in the proposed Order. However, the Dilution/Mixing Zone Study is inadequate for allowance of dilution credits for compliance with aquatic toxicity criteria. The study does not address all of the conditions required in section 1.4.2.2. of the SIP, which requires, in part, that a mixing zone shall not cause acutely toxic conditions to aquatic life passing through the mixing zone or restrict the passage of aquatic life. In addition, the boundaries of the acute and chronic mixing zones were not identified. Therefore, it is not appropriate to grant dilution credits for compliance with aquatic life criteria at this time.

The April 2004 Study was conducted using a prototype diffuser. The Discharger has since constructed an outfall diffuser and on 12 January 2009, as part of its comments, submitted additional information in support of aquatic toxicity dilution credits. The additional evaluation was a mixing zone study performed using the new diffuser. Regional Water Board Staff have concerns with the Discharger's 12 January 2009 study. Rather than using a dye, the Discharger used total dissolved solids (TDS) as a tracer to evaluate mixing downstream of the diffuser. Using a constituent such as TDS can be used as a tracer when there is a large difference between TDS concentrations in the effluent and receiving water. However, in this case the difference was not significant enough to accurately identify the plume (e.g. upstream TDS averaged 157 mg/L and the effluent averaged 171 mg/L). Consequently, there continues to be insufficient information to allow a dilution credit for compliance with aquatic toxicity criteria. The proposed Order includes a reopener provision that allows the permit to be reopened and modified as appropriate should the Discharger submit an approved Dilution/Mixing Zone Study that meets the requirements of Section 1.4.2.2 of the SIP, including defining the boundaries of the acute and chronic mixing zones.

Discharger Comment No. 2. Extension of Surface Water Discharge Season

As in the District's previous Order (No. R5-2003-01151), the Tentative Order contains a prohibition of discharge to the North Fork Calaveras River from 1 May through 31 October. The District requested in the Report of Waste Discharge to extend the permitted period of surface water discharge to include 16 October through 3 1 May. Section IV.A.2 of Attachment F of the Tentative Order specifies that the District must submit a report evaluating the use of the additional land disposal area (i.e., Neilson Property) as an alternative to extension of the surface water discharge season. This section further states that should the District submit an evaluation demonstrating that utilizing the additional land disposal does not mitigate the need for extension of the surface water discharge season, the Order may be reopened to modify the prohibition to extend the permitted period of surface water discharge.

The District has reviewed its water balances and preliminary geologic and hydrogeologic investigations of the Neilson Property. Thought there is ample field evidence that an effluent discharge to North Fork Calaveras River will be necessary under very wet May conditions when North Fork Calaveras River flows are high and area soils are saturated, the District agrees with the Tentative Order that more field study of the Nielson Property and additional storage reservoir sites is appropriate before the discharge season is extended into May.

RESPONSE: Comment noted.

Discharger Comment No. 3. Flow Ratio Prohibition

The District's previous Order contained a prohibition of discharges of secondary treated effluent to the North Fork Calaveras River in quantities that would exceed a minimum of 20:1 dilution as a daily average. The District requested in the Report of Waste Discharge that upon completion of upgrades to the Facility to provide tertiary level treatment the discharge prohibition be changed from 20:1 for secondary treated effluent to 10: 1 for tertiary treated effluent. The District recognized that the Tentative Order contains a reopener provision for 'this issue. However, in an effort to minimize use of both District and Water Board resources, which would be required to reopen the Order within two years of adoption, the District proposes that allowance of 10: 1 tertiary treated effluent discharge limits be included in the Tentative Order. In other words, simply include one set of requirements and limits applicable to secondary treated effluent surface water discharges and a second set of effluent limits that go into effect only after the completion of tertiary treatment improvements.

RESPONSE: Regional Water Board staff disagrees with changing the flow ratio discharge prohibition from 20:1 to 10:1 and placing effluent limitations reflecting the lower flow ratio in the Order effective when the upgrade to tertiary treatment is complete. It is necessary for the Discharger to perform an antidegradation analysis to evaluate whether the discharge at a 10:1 flow ratio would be in compliance with

the State Water Board's Antidegradation Policy (Resolution 68-16). The proposed Order includes a reopener provision that allows the permit to be reopened and modified accordingly should the Discharger provide information necessary to change the flow ratio prohibition.

Discharger Comment No. 4. Bis(2-ethylhexyl)phthalate Effluent Limits

The Tentative Order includes bis(2-ethylhexyl)phthalate effluent limits of *25* µg/L as an average monthly limit and 68 µg/L as a maximum daily limit. Because North Fork Calaveras River bis(2-ethylhexyl)phthalate concentrations were non-detect during sampling events conducted 2 May 2007 and 2 January 2008, bis(2-ethylhexyl)phthalate water quality based effluent limits were calculated using the Caltest Analytical Laboratory method detection limit of 0.6 µg/L (Tentative Order Table F-7). A sample collected 2 January 2008 was also analyzed for bis(2-ethylhexyl)phthalate by CRG Marine Laboratories and reported as non-detect with a method detection limit of 0.1 µg/L (lab report included as Attachment C to this letter). The CRG non-detected bis(2-ethy1hexyl)phthalate result provides evidence that the North Fork Calaveras River has more assimilative capacity than was considered in determining the bis(2-ethylhexyl)phthalate water quality based effluent limits included in the Tentative Order. The District requests that bis(2-ethylhexyl)phthalate effluent limits be recalculated using the appropriate maximum background concentration of 0.1 µg/L, which provides effluent limits of 34 µg/L as an average monthly limit and 95 µg/L as a maximum daily limit. Given that the District has a maximum effluent concentration (MEC) for bis(2-ethylhexyl)phthalate of 55 µg/L, revision of these limits is appropriate and necessary.

RESPONSE: Regional Water Board staff agrees with the Discharger on the use of analytical results with a more sensitive analytical method detection level. Use of the lowest reported method detection level is consistent with Section 1.4.3.1 of the SIP. Regional Water Board staff has evaluated the Discharger's calculations and finds that the revised effluent limitations for bis(2-ethylhexyl)phthalate are appropriate. Therefore, the proposed Order has been modified to include an average monthly effluent limitation of 34 µg/L and maximum daily effluent limitation of 95 µg/L.

Discharger Comment No. 5. DLDA Operating Requirements

In the Provision VI.B.4.a.ii of the Tentative Order, the maximum daily discharge to the Designated Land Disposal Area (DLDA) is limited to 0.9 MGD as a daily maximum. This limit is held over from the District's previous Order, and represents the hydraulic design capacity of the trickling filter. The limit of 0.9 MGD is no longer an applicable limit for discharge to the DLDA as the Facility now contains redundancy features, which were not in place at the time of adoption of the previous Order. Under its current configuration, the facility has the capability to discharge up to 1.8 MGD to the DLDA: 1.5 MGD through the new treatment process and up to 0.3 MGD through the High Flow

Treatment System (HFTS). Therefore, the District proposes that the maximum daily discharge limit to the DLDA be 1.8 MGD.

RESPONSE: Regional Water Board staff agrees with revising the provision limiting the maximum daily flow discharged to the DLDA, which was based on the hydraulic design capacity of the trickling filter. Section VI.C.4.a.ii of the proposed Order will be revised to allow a maximum daily discharge of 1.8 MGD to more accurately reflect the hydraulic capacity of the current treatment plant configuration. The provision limiting the average dry weather flow rate to the DLDA remains unchanged from the previous Order. Therefore, Regional Water Board staff does not expect that the increase in the maximum flow rate will result in an overall increase in the amount of flow directed to the DLDA.

Discharger Comment No. 6. Flow Increase Request

In Report of Waste Discharge, the District indicated that, as a part of the proposed upgrades to the Facility to provide tertiary treatment, the District plans to increase the peak flow capacity to 1.9 MGD. However, during the time of the preparation of the Report of Waste Discharge, the final design of Facility upgrades was not complete. The final design of Facility upgrades is now complete and does not include a peak flow capacity for the tertiary treatment process above the 1.5 MGD limit included in the Tentative Order. Therefore, the District does not plan to increase the peak flow discharge capacity to North Fork Calaveras River to 1.9 MGD as part of the proposed upgrades to the Facility as indicated in the Report of Waste Discharge. The flow capacity limit to North Fork Calaveras River of 1.5 MGD included in the Tentative Order is adequate, even after the completion of Facility upgrades to provide tertiary treatment. The HFTS will remain operational to handle influent flows in excess of the capacity of the Facility. As noted in the Report of Waste Discharge and the current Order, the HFTS discharges only to Pond D. Because there are no plans for a flow capacity increase, an antidegradation analysis is not required.

RESPONSE: The Regional Water Board staff acknowledges the comment, and will modify the language in Section II.E of the Fact Sheet to reflect the fact that the peak flow capacity will not be increased.

CALIFORNIA SPORTFISHING PROTECTION ALLIANCE (CSPA) COMMENTS

Designated Party Status. CSPA requested designated party status for the board hearing on this matter. The commenter will be granted designated party status for the hearing.

CSPA Comment No. 1. The proposed Permit contains an allowance for a mixing zone that does not comply with the requirements of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP) or the Basin Plan. The proposed Permit contains mixing zones that are unaddressed in an antidegradation analysis and does not comply with the requirements of Section 101(a) of the Clean Water Act, Federal Regulations 40 CFR § 131.12, the State Board's Antidegradation Policy (Resolution 68-16) and California Water Code (CWC) Sections 13146 and 13247.

RESPONSE: See response to Discharger Comment No. 1 regarding mixing zones for aquatic life protection.

This proposed Order includes Discharge Prohibition III.F., which requires at least a 20:1 flow ratio (North Fork Calaveras River : effluent) at all times. For constituents where water quality criteria are based on human health objectives, critical environmental impacts are expected to occur far downstream from the source such that complete mixing is a valid assumption. Based on a review of the State Water Board's eWRIMS water rights database, there are no water rights for domestic use from the discharge point downstream to New Hogan Reservoir, which is over 1 mile downstream. Therefore, a dilution credit of 20:1 is allowed for compliance with long-term human health criteria. The dilution study predicted that after two stream widths (i.e., approximately 120 feet for the 60-foot wide reach of the river) the discharge was approximately 80 percent mixed. Regional Water Board staff conservatively estimates that complete mixing will occur 250 feet downstream of the discharge, which will serve as the boundary for the human health mixing zone.

CSPA Comment No. 2. The proposed Permit does not contain an Effluent Limitation for oil and grease in violation of Federal Regulations 40 CFR 122.44 and California Water Code Section 13377.

RESPONSE: Regional Water Board staff disagree that effluent limitations for oil and grease are necessary simply because the Facility is a wastewater treatment plant. The Discharger is required to be covered under State Water Board Order 2006-0003, a Statewide General WDR for Sanitary Sewer Systems, which requires each enrollee to evaluate its service area to determine whether a Fat, Oil, and Grease (FOG) control program is needed. If an enrollee determines that a FOG control program is not needed, the enrollee must provide justification for why it is not

needed. If FOG is found to be a problem, the enrollee must prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. The Discharger's compliance with the requirements of WQO 2006-0003 will ensure minimal amounts of oil and grease are discharged into the Facility. The average effluent oil and grease concentration was 6 mg/L with a maximum of 10 mg/L based on 23 samples from March 2004 – April 2008. Therefore, the discharge does not have a reasonable potential to cause and or contribute to an exceedance of the Basin Plan's water quality objective for oil and grease and floating materials. The proposed Order includes a monthly effluent monitoring requirement for oil and grease and contains narrative receiving water limitations for oil and grease and floating materials. These requirements are adequately protective of the receiving water.

CSPA Comment No. 3. The proposed Permit fails to contain mass-based effluent limits for bis(2-ethylhexyl)phthalate, chlordane, copper, cyanide, dichlorobromomethane and zinc as required by Federal Regulations 40 CFR 122.45(b).

RESPONSE: 40 CFR 122.45(f)(1)(ii) states that mass limitations are not required when applicable standards and limitations are expressed in terms of other units of measurement. Numerical effluent limitations for bis(2-ethylhexyl)phthalate, chlordane, copper, cyanide, dichlorobromomethane and zinc in the proposed permit are based on water quality standards and objectives. These standards and objectives are expressed in terms of concentration. Pursuant to 40 CFR 122.25(f)(1)(ii), expressing the effluent limitations in terms of concentration is in accordance with Federal Regulations.

Mass limitations for oxygen demanding substances and bioaccumulative substances are included in the proposed Order. The proposed Order includes mass limitations for 1) BOD, TSS, and ammonia since they are considered oxygen demanding substances, and 2) diazinon since it is a bioaccumulative constituent. For those pollutant parameters for which effluent limitations are based on water quality objectives and criteria that are concentration-based (i.e., bis(2-ethylhexyl)phthalate, chlordane, copper, cyanide, dichlorobromomethane and zinc), mass-based effluent limitations are not included in this Order.

CSPA Comment No. 4. The proposed Permit contains an Effluent Limitation for acute toxicity that allows mortality to aquatic life that exceeds the Basin Plan water quality objective and does not comply with Federal regulations, at 40 CFR 122.44 (d)(1)(i) or the Clean Water Act.

RESPONSE: The appropriateness of the acute toxicity effluent limitations was addressed in State Water Board Order WQ 2008-0008 (City of Davis). In WQ 2008-

0008, the State Water Board concurred with the Regional Water Board's implementation of the acute toxicity effluent limitations.

The acute whole effluent toxicity limitations establish additional thresholds to control acute toxicity in the effluent: survival in one test no less than 70 percent and a median of no less than 90 percent survival in three consecutive tests. Some in-test mortality can occur by chance. To account for this, the acute toxicity test acceptability criteria allow 10 percent mortality (requires 90 percent survival) in the control. Thus, the acute toxicity limitations allow for some test variability, but impose ceilings for exceptional events (i.e., 30 percent mortality or more), and for repeat events (i.e., median of three events exceeding mortality of 10 percent). These effluent limitations are consistent with the USEPA guidance document titled "Guidance for NPDES Permit Issuance", dated February 1994, which states the following:

> "*In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc*."

CSPA Comment No. 5. The proposed Permit does not contain enforceable Effluent Limitations for chronic toxicity and therefore does not comply with the Basin Plan, Federal Regulations, at 40 CFR 122.44 (d)(1)(i) and the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (SIP).

RESPONSE: The State Water Board found in Order WQO 2003-0012 (Los Coyotes) and Order WQ 2008-0008 (City of Davis) that narrative effluent limitations for chronic toxicity must be established for discharges which exhibit reasonable potential. However, the State Water Board did not specify how to determine compliance with the narrative effluent limitation. Under the most literal interpretation, a result of even 1.1 chronic toxicity units (TUc) would be a violation of the permit. This interpretation is not appropriate, because whole effluent toxicity (WET) testing is imprecise by nature, and one sample is not necessarily indicative of chronic toxicity. In addition, reading the narrative limitation to mean that any excursion above 1 TUc violates the permit has the same practical effect as a numeric limitation of 1 TUc. The State Water Board rejected the numeric approach in Order WQO 2003-0012.

Where WET testing indicates potential chronic toxicity, the SIP (and Order No. R5-2008-0154) require additional accelerated monitoring. The lack of precision in WET testing could be addressed, in part, by using all the accelerated monitoring data to

demonstrate compliance with the limitation. In that case, any time the monitoring demonstrated a need for a TRE/TIE, the discharger would be in violation of the narrative effluent limitation. This would be the case even if the discharger commenced a TRE/TIE and complied with all applicable requirements of the SIP and Order No. R5-2008-0154 for addressing chronic toxicity. Again, however, this is indistinguishable from a numeric limit of 1 TUc. It is also inconsistent with the State Water Board's focus on the TRE/TIE as the way to determine appropriate limits and prevent chronic toxicity.

The accelerated testing and TRE/TIE requirements are viewed as an integral part of the effluent limitation. In the WQO 2003-0012, the State Water Board noted that best management practices (BMPs) may substitute for numeric effluent limitations when developing numeric limitations is infeasible. The State Water Board then concluded that numeric toxicity limitations are infeasible. Relying on accelerated testing and the TRE/TIE to satisfy the narrative effluent limitation is a BMP-based approach and therefore consistent with the reasoning in WQO 2003-0012.

The proposed Order contains acute toxicity effluent limitations. In addition to the acute toxicity limitations, during the TRE/TIE process the Discharger is also subject to the receiving water toxicity limitation. Taken together, these provisions allow the Discharger time to address a newly-discovered chronic toxicity problem without being in non-compliance, consistent with the Regional Water Board's approach to attaining permit compliance and with the State Water Board's permitting approach for chronic toxicity.

CSPA Comment No. [unnumbered]. Effluent Limitations for specific conductivity (EC) and iron are improperly regulated as an annual average contrary to Federal Regulations 40 CFR 122.45 (d)(2) and common sense.

Federal Regulation 40 CFR 122.45 (d)(2) requires that permit for POTWs establish Effluent Limitations as average weekly and average monthly unless impracticable. The proposed Permit establishes Effluent Limitations for EC and, iron as an annual average contrary to the cited Federal Regulation. Establishing the Effluent Limitations for EC and iron in accordance with the Federal Regulation is not impracticable; to the contrary the Central Valley Regional Board has a long history of having done so. Proof of impracticability is properly a steep slope and the Regional Board has not presented any evidence that properly and legally limiting EC and iron is impracticable.

RESPONSE: Regional Water Board staff disagrees. Based on the low reported salinity in the effluent, the discharge does not have reasonable potential to cause or contribute to an instream excursion of water quality objectives for salinity. However, since the Facility discharges to the North Fork Calaveras River, which is tributary to the Sacramento – San Joaquin Delta, of additional concern is the salt contribution to Delta waters. Therefore, the proposed Order includes an annual average effluent limitation for EC equal to the municipal water supply EC plus an increment of

500 µmhos/cm (or 700 µmhos/cm, which ever is less). This limitation serves as a cap to keep the discharge from exceeding current levels. Regional Water Board staff concludes that an annual average limitation is appropriate for this purpose.

The effluent limitations for iron are based on secondary maximum contaminant levels which address aesthetics such as taste and odor and not an aquatic life criterion. Secondary MCLs are drinking water standards contained in Title 22 of the California Code of Regulations. For secondary MCLs, Title 22 requires compliance with these standards on an annual average basis, when sampling at least quarterly. Since water that meets these requirements on an annual average basis is suitable for drinking, it is impracticable to calculate average weekly and average monthly effluent limitations because such limits would be more stringent than necessary to protect the MUN use. Regional Water Board staff has determined that an averaging period similar to what is used by the Department of Public Health for those parameters regulated by secondary MCLs is appropriate, and that using shorter averaging periods is impracticable because it sets more stringent limits than necessary.

CSPA Comment No. 6. The proposed Permit fails to require compliance with applicable regulations for the discharge of reclaimed water.

The proposed Permit contains *Reclamation Specifications*, which simply require compliance with CCR Title 22. The proposed permit does not require compliance with Health and Safety Code Chapter 5 Article 2 regarding cross connections and the use of purple pipe. The proposed Permit does not state whether the required Engineering Report has been completed and approved by DPH.

Attachment No. B does not adequately show that the discharge is virtually a direct discharge into a reservoir.

RESPONSE: As stated in Section IV.G of the Fact Sheet of the proposed Order, the Discharger is not currently reclaiming water, but the provisions were added in case they decide to reclaim during the permit term. The reclamation requirements contained in the proposed Order have been removed as the Discharger is not currently reclaiming effluent from the wastewater treatment plant. Should the Discharger decide during the term of the Order to reclaim effluent, they are required to notify the Regional Water Board and comply with CCR Title 22 requirements, including submission of an Engineering Report to the Department of Public Health (DPH) for approval. Upon approval by DPH, the Order will then be modified accordingly to include the appropriate reclamation requirements.

Regional Water Board staff disagrees that Attachment B in the proposed Order needs to be revised. The fact that North Fork Calaveras River is a tributary to the New Hogan Reservoir is stated in the Order at Sections II.B and II.H, and Section II.B of the Fact Sheet.

CSPA Comment No. 7. The Proposed Permit Fails to Include Limitations that are Protective of the Municipal and Domestic Beneficial Uses of the Receiving Stream Contrary to Federal Regulations 40 CFR 122.4, 122.44(d) and the California Water Code, Section 13377.

RESPONSE: Regional Water Board staff disagrees. The proposed permit is fully protective of the municipal and domestic water supply (MUN) beneficial use of the receiving water. The commenter claims that for pathogens, the most sensitive beneficial use is MUN, due to the direct ingestion of the water, and the proposed permit only discusses protection of the contact recreation (REC-1) and agricultural water supply (AGR) beneficial uses with respect to pathogens.

There are no numeric water quality objectives applicable to the receiving water for pathogens for the protection of MUN. The only water quality objective that applies to surface waters is the bacteria objective in the Basin Plan, which states, "*In waters designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml.*" The proposed Order includes effluent limitations for pathogens based on recommendations by DPH for protection of REC-1 and AGR. These effluent limitations are also fully protective of the MUN use.

In 1987, the Department of Health Services (DHS) (now the Department of Public Health, or DPH) issued the "Uniform Guidelines for the Disinfection of Wastewater" (Uniform Guidelines), which included recommendations to the Regional Water Board regarding the appropriate level of disinfection for wastewater discharges to surface waters. The DHS provided a letter dated 1 July 2003 that included clarification of the recommendations. The letter states, "*A filtered and disinfected effluent should be required in situations where critical beneficial uses (i.e. food crop irrigation or body contact recreation) are made of the receiving waters unless a 20:1 dilution ration (DR) is available. In these circumstances, a secondary, 23 MPN discharge is acceptable.*" DHS considers such discharges to be essentially pathogen-free. (Letter from David P. Spath to Gary Carlton (16 September 1999) p. 3 and Enclosure to same, p. 6.) The proposed Order is consistent with these recommendations, considering site-specific factors. Title 22 is not directly applicable to surface waters; however, the Regional Water Board has found that it is appropriate to apply an equivalent level of treatment to that required by DPH's reclamation criteria when there is less than 20:1 dilution (receiving water:effluent) because the receiving water may be used for irrigation of agricultural land (AGR) and/or for contact recreation (REC-1) purposes.

In site-specific situations[1] where a discharge is occurring to a stream with a nearby water intake used as a domestic water supply without treatment, DPH has recommended the same Title 22 tertiary treatment requirements for the protection of MUN, as well as protecting REC-1 and AGR. However, DPH has recommended a 20:1 dilution ratio in addition to the Title 22 tertiary treatment requirement to protect the domestic water supply only where there are existing users of raw water near the treatment plant outfall. In this case, staff reviewed the State Water Boards eWRIMS water rights database, and there are no such known uses in the vicinity of the discharge, so tertiary treatment plus 20:1 dilution is not necessary to protect the MUN, REC-1 or AGR uses.

The chemical constituents narrative objective states, "Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses." The narrative toxicity objective states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." When necessary, the Regional Water Board adopts numeric effluent limitations to implement these objectives. The *Policy for Application of Water Quality Objectives* states, "To evaluate compliance with the narrative water quality objectives, the Regional Water Board considers, on a case-by-case basis, direct evidence of beneficial use impacts, all material and relevant information submitted by the discharger and other interested parties, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations (e.g., State Water Board, California Department of Health Services, California Office of Environmental Health Hazard Assessment, California Department of Toxic Substances Control, University of California Cooperative Extension, California Department of Fish and Game, USEPA, U.S. Food and Drug Administration, National Academy of Sciences, U.S. Fish and Wildlife Service, Food and Agricultural Organization of the United Nations). In considering such criteria, the Board evaluates whether the specific numerical criteria, which are available through these sources and through other information supplied to the Board, are relevant and appropriate to the situation at hand and, therefore, should be used in determining compliance with the narrative objective."

In this case, however, there are no known users of raw water (i.e., existing uses of untreated domestic water) in the vicinity of the discharge, and there is no direct evidence of beneficial use impacts. For public water supplies, wastewater discharges do not require drinking water treatment plants to add any additional treatment, since state and federal law require residual chlorine and/or ultraviolet disinfection of surface water. (*See, e.g.,* Surface Water Treatment Rule, 40 C.F.R. Part 141, Subpart H; Cal. Code of Regs. Title 22, section 64447.) Wastewater discharges do not interfere with such treatment processes. In this

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[1] For example, see Waste Discharge Requirements Order No. R5-2007-0133 (NPDES No. CA0079391) for the City of Jackson Wastewater Treatment Plant, Amador County.

case, moreover, there are no public drinking water intakes near the treatment plant outfall. Thus, a requirement for Title 22 tertiary in addition to the 20:1 flow ratio is not required.

The State Water Board has already determined that tertiary treatment is not necessary when dilution exceeds 20:1. (Order WQ 2004-0010 (City of Woodland).) The City of Woodland order addressed REC-1 and not MUN, which was not an existing use of the receiving water. However, the State Water Board has twice concluded that it is appropriate for the Regional Water Board to rely on DHS (now DPH) guidance in determining the level of treatment necessary to protect human health. (*Id.,* p. 11; Order WQ 2002-0016 (City of Turlock), p. 11.)

In summary, there are no numeric water quality objectives for pathogens for the protection of MUN. Therefore, the Regional Water Board, when developing NPDES permits, implements recommendations by DPH for the appropriate disinfection requirements for the protection of MUN, as well as REC-1 and AGR. The disinfection requirements in the proposed Order implement the DPH recommendations and are fully protective of the beneficial uses of the receiving water.

CSPA Comment No. 8. The proposed Permit contains mass based Effluent Limitations for chlorine residual, copper and zinc less stringent than the existing permit and the chronic based Effluent Limitation for aluminum has been removed contrary to the Antibacksliding requirements of the Clean Water Act and Federal Regulations, 40 CFR 122.44 (l)(1).

RESPONSE: See response to CSPA Comment No. 3 regarding the rationale for not including mass-based effluent limitations in the proposed Order for copper and zinc. In addition, and as described in Section IV.D.3 of the Fact Sheet for the proposed Order, the numerical effluent limitations for chlorine residual established in the Order are based on water quality standards and objectives, which are expressed in terms of concentration. Pursuant to 40 CFR 122.25(f)(1)(ii), expressing the effluent limitations in terms of concentration is in accordance with Federal Regulations. Although the mass limitations for chlorine residual, copper, and zinc have been removed, this does not constitute backsliding, because (1) this Order includes equivalent or more stringent concentration-based effluent limitations for these constituents, and (2) the flow has not increased, which is the basis for calculating mass-based effluent limitations. Compliance with the concentration-based limits will ensure that significantly less mass of the pollutants is discharged to the receiving water. Removal of the mass-based effluent limitations is thus allowed under Clean Water Act section 303(d)(4).

See response to CSPA Comment No. 13 for the rationale for removal of the effluent limitations for aluminum.

CSPA Comment No. 9. The proposed Permit contains an inadequate antidegradation analysis that does not comply with the requirements of the State Board's Antidegradation Policy (Resolution 68-16) and California Water Code (CWC) Sections 13146 and 13247.

RESPONSE: As was described in the fact sheet for Order R5-2003-0151:

"Some degradation of groundwater beneath the WWTP and associated DLDA is consistent with Resolution 68-16 provided that:

a. the degradation is confined within a specified boundary;
b. The Discharger minimizes degradation by fully implementing, regularly maintaining, and optimally operating best practicable treatment and control (BPTC) measures;
c. The degradation is limited to waste constituents typically encountered in domestic wastewater as specified in the groundwater limitation in this Order; and,
d. The degradation does not result in water quality less than that prescribed in the Basin Plan.

Some degradation of groundwater by some of the typical waste constituents released with the discharge from a municipal wastewater utility, after effective source control, treatment, and control is consistent with the maximum benefit to the people of the State. The technology, energy, and waste management advantages of municipal utility service far exceed any benefits derived from a community otherwise reliant on numerous concentrated individual wastewater systems, and the impact on water quality will be substantially less. Degradation of groundwater by toxic pollutants other than those typically associated with a WWTP, and by pollutants that can be effectively removed by conventional treatment (e.g. total coliform bacteria) is prohibited. When allowed, the degree of degradation permitted depends upon many factors including; background water quality, the pollutant, the beneficial uses of groundwater and most stringent water quality objective, source control measures, and pollutant treatability. Economic prosperity of the local community is of maximum benefit to the people of the State, and therefore sufficient reason exists to accommodate growth and groundwater degradation around the WWTP, provided that the terms of the Basin Plan including SWRCB Resolution 68-16, are met.

As required by previous Order No. 5-01-118, the Discharger is currently installing a series of three wells to assess and monitor the impact of the discharge on groundwater, if any. This Order includes groundwater limitations that allow groundwater to be degraded when compared to background groundwater quality, but not to exceed water quality objectives. If groundwater quality has been degraded by the operation of the WWTP beyond the quality described above, this Order may be reopened, and specific numeric limitations imposed."

As described in Section V.B of the Fact Sheet for the proposed Order, the groundwater monitoring data does indicate that the existing groundwater limitations were exceeded. In light of these exceedances, the proposed Order retained the groundwater limitations, and included a compliance schedule that requires the Discharger to submit a technical report describing the groundwater results for total coliform organisms and critiquing each evaluated component of the Facility with respect to BPTC and minimizing the discharge's impact on groundwater quality. The technical report shall include specific methods the Discharger proposes as a means to measure processes and assure continuous optimal performance of BPTC measures.

The Regional Water Board acknowledges the potential impact of storm water runoff from the DLDA. Therefore, as part of the DLDA Operating Requirements in Section VI.C.4 of the proposed Order, the following provisions were included:

viii. Ponds and disposal trenches shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the irrigation season (May through October). Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns. Freeboard shall never be less than 2 feet (measured vertically to the lowest point of overflow), except if lesser freeboard does not threaten the integrity of the pond, no overflow of the pond occurs, and lesser freeboard is due to direct precipitation or storm water runoff occurring as a result of annual precipitation with greater than a 100-year recurrence interval, or a storm event with an intensity greater than a 25-year, 24-hour storm event.

ix. There shall be no runoff or overflow of effluent outside the DLDA. The ponds and disposal trenches shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

CSPA Comment No. 10. The proposed Permit inappropriately exempts the land disposal discharge from California Code of Regulations (CCR) Title 27.

RESPONSE: Regional Water Board staff disagrees. First, the discharges of domestic sewage or treated effluent are exempt from Title 27 under section 20090(a). The DLDA is part of the wastewater treatment facility is are explicitly exempt from Title 27 under section 20090(a). Second, the Basin Plan on page II-9-00 states "These objectives [Bacteria, Chemical Constituents, Radioactivity, Tastes and Odors, and Toxicity] do not require improvement over naturally occurring background concentrations." The proposed Order contains several mechanisms to determine whether the treated wastewater is threatening to cause or has caused groundwater to contain waste constituents in concentrations greater than

background water quality, and thus ensure that Best Practicable Treatment or Control are or will be in place to protect the Beneficial Uses of the groundwater**.**

The applicable exemption states in Title 27,

> "Discharges of domestic sewage or treated effluent which are regulated by WDRs …, or for which WDRs have been waived, and which are consistent with applicable water quality objectives, *and treatment or storage facilities associated with municipal wastewater treatment plants* …"

(Cal. Code of Regs., tit. 22, § 20090, subd. (a) (emphasis added).) This exemption has two parts. It exempts discharges of domestic sewage or treated effluent that are regulated by WDRs or a waiver, and that are consistent with applicable water quality objectives. It separately exempts treatment or storage facilities associated with municipal wastewater treatment plants. This second part of the exemption is not subject to the requirement that the discharge meet water quality objectives.

Since the ponds are exempt under the second part of subdivision (a), the permit need not include findings, and the record need not include evidence, that the pond discharges already comply with water quality objectives. However, the Discharger must still determine background and demonstrate that the discharge is not causing degradation. As discussed below, the requirements of the proposed Order include a time schedule to ensure that the pond discharges meet applicable Basin Plan requirements, including applicable groundwater quality objectives.

The Order requires the Discharger to complete a background groundwater quality and groundwater degradation assessment study. If the groundwater monitoring results show that the discharge of waste is threatening to cause or has caused groundwater to contain waste constituents in concentrations greater than background water quality, the Discharger must submit a Best Practicable Treatment or Control (BPTC) Evaluation Workplan that sets forth a scope and schedule for a systematic and comprehensive technical evaluation of each component of the Facility's waste management system to determine BPTC for each waste constituent of concern. Resolution 68-16 requires WDRs to "result in" BPTC, prevent pollution or nuisance, and assure "the highest water quality consistent with maximum benefit to the people of the State will be maintained." However, Resolution 68-16 does not require a discharge to meet these requirements immediately. WDRs may provide a time schedule to meet those requirements. (CWC § 13263, subd. (c).) The proposed Order provides a time schedule (Provision VI.C.2.c) to complete groundwater evaluation and BPTC analysis and complete any necessary facility modifications to ensure the discharge meets the requirements of Resolution 68-16.

The Order contains additional mechanisms to ensure that the treated wastewater does not cause or threaten to cause groundwater to contain waste constituents in concentrations greater than background water quality. The Order requires the Discharger to monitor the groundwater upgradient and downgradient of every

treatment, storage, and disposal unit that does or may release waste constituents to groundwater. In addition, the proposed Order includes a compliance schedule for the Discharger to develop and submit a Best Practicable Treatment or Control Evaluation to ensure the facility is meeting BPTC in compliance with State Water Board Resolution 68-16. Since these requirements will ensure compliance with the Basin Plan, the finding that the waste discharge *requirements* are consistent with water quality objectives is accurate.

Exempting the pond discharges under section 20090, subdivision (a) does not mean that exempt facilities need not comply with Basin Plan requirements. All WDRs for all facilities must require that discharges do not degrade groundwater or cause groundwater to exceed water quality objectives. (*See, e.g.,* Order No. WQ 81-5 (City of Lompoc).)

CSPA Comment No. 11. The proposed Permit establishes Effluent Limitations for metals based on the hardness of the effluent as opposed to the ambient upstream receiving water hardness as required by Federal Regulations, the California Toxics Rule (CTR, 40 CFR 131.38(c)(4)).

RESPONSE: In the proposed Order the hardness-dependent metals criteria were established based on the reasonable worst-case ambient hardness as required by the SIP, the CTR and Order No. WQO 2008-0008 (City of Davis). The CTR and the SIP require the use of "receiving water" or "actual ambient" hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(2), Table 4, note 4.) In some cases, the hardness of effluent discharges changes the hardness of the ambient receiving water. Where reliable, representative data are available, the hardness value for calculating effluent limitations can be the downstream receiving water, after mixing with the effluent (Order WQO 2008-0008, p. 11). The hardness values must also be protective under all flow conditions (*Id.*, pp. 10-11). As discussed below, scientific literature provides a reliable method for calculating protective effluent limitations for metals with hardness-dependent CTR criteria. This methodology produces effluent limitations that prevent these metals from causing receiving water toxicity, while avoiding effluent limitations that are unnecessarily stringent.

Effluent limitations for the discharge must be set to protect the beneficial uses of the receiving water for all discharge conditions using a reasonable worst-case condition. The SIP does not address how to determine hardness for application to the equations for the protection of aquatic life when using hardness-dependent metals criteria. It simply states, in Section 1.2, that the criteria shall be properly adjusted for hardness using the hardness of the receiving water. The CTR requires that, for waters with a hardness of 400 mg/L (as $CaCO_3$), or less, the actual ambient hardness of the surface water must be used. It further requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones. The CTR does not define whether the term "ambient," as

applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions. The Regional Water Board thus has considerable discretion in determining ambient hardness (Order WQ 2008-0008, p.10.). The City of Davis order allows the use of "downstream receiving water mixed hardness data" where reliable, representative data are available. (Id., p. 11.)

A 2006 study[1] evaluated the relationships between hardness and the CTR metals criteria as the effluent and receiving water mix. The 2006 study demonstrates that it is necessary to evaluate all discharge conditions (e.g. high and low flow conditions) when determining the appropriate hardness for calculating effluent limitations for hardness-dependent metals. Simply using the lowest recorded receiving water hardness may result in over or under protective effluent limitations and would not represent the reasonable worst-case hardness of the receiving water.

Using the methodology described in the 2006 study, the Design Hardness used for calculating hardness-dependent metals criteria in the proposed Order ranged from 57-59 mg/L (as $CaCO_3$), depending on the metal. The upstream receiving water hardness ranged from 40 – 130 mg/L. Therefore, the Design Hardnesses used in the proposed Order are within the range of hardness concentrations observed in the receiving water, which is consistent with the CTR and the SIP.

CSPA Comment No. 12. The proposed Permit fails to contain an Effluent Limitation for aluminum in accordance with Federal Regulations 40 CFR 122.44, US EPA's interpretation of the regulation, and California Water Code, Section 13377.

RESPONSE: CSPA contends that the chronic criterion (87 µg/L) recommended by the USEPA National Ambient Water Quality Criteria (NAWQC) for Aluminum should be applied for this discharge. Regional Water Board staff disagrees. The chronic criterion is based on studies conducted on waters with low pH (6.5 to 6.8 pH units) and hardness (<10 mg/L as $CaCO_3$). Monitoring data demonstrates that these conditions are not similar to those in the North Fork Calaveras River. Order No. R5-2003-0151 indicated that the minimum observed pH of the North Fork Calaveras River was 7.8 and the minimum observed hardness was 60 mg/L. The Discharger reported a minimum observed hardness value of 40 mg/L in the permit renewal application. Additionally, hardness values of 110 mg/L and 130 mg/L were observed on 2 May 2007 and 2 January 2008, respectively. Thus, it is unlikely that application of the chronic criterion of 87 ug/L is necessary to protect aquatic life in the North Fork Calaveras River and USEPA advises that a water effects ratio may be more appropriate to better reflect the actual toxicity of aluminum to aquatic organisms. In the absence of an applicable chronic aquatic life criterion, the most stringent water

[1] Emerick, R.W.; Borroum, Y.; & Pedri, J.E., 2006. California and National Toxics Rule Implementation and Development of Protective Hardness Based Metal Effluent Limitations. WEFTEC, Chicago, Ill.

quality criterion is the Secondary MCL - Consumer Acceptance Limit for aluminum of 200 µg/L, which was used as the basis for the reasonable potential analysis.

As described in Section IV.C.3.f of the Fact Sheet for the proposed Order, the maximum annual average effluent concentration for aluminum was 227 µg/L, based on 28 samples collected between 1 November 2005 and 30 April 2008. (Note that as described in response to CSPA Comment No. 6, use of annual averages for implementation of secondary MCLs is appropriate.) The maximum annual average upstream receiving water aluminum concentration was 7 µg/L, based on two samples collected on 2 May 2007 and 2 January 2008. The maximum annual average receiving water and effluent concentrations were used in the reasonable potential analysis for evaluating the secondary MCL based on input from the DPH and the fact that MCLs are designed to protect human health over long exposure periods. Due to the low levels of aluminum in the receiving water and the consideration of a minimum required dilution of 20:1, the effluent does not exhibit reasonable potential to exceed the Secondary MCL for aluminum.

CSPA Comment No. 13. The proposed Permit fails to include an Effluent [Limitation] for manganese as required by Federal Regulations 40 CFR 122.44 and the permit should not be adopted in accordance with California Water Code Section 13377.

RESPONSE: Regional Water Board staff disagrees that consideration of the ambient background concentrations and expected dilution cannot be used in making a reasonable potential determination for non-SIP constituents. Since manganese is not a priority pollutant, the reasonable potential analysis (RPA) procedures recommended in USEPA's TSD were used rather than the SIP's. In the TSD RPA procedures, the determination of reasonable potential is made downstream of the discharge after mixing with the receiving water. Due to the low levels of manganese in the receiving water and the consideration of a minimum required dilution of 20:1, the effluent does not exhibit reasonable potential to cause or contribute to an exceedance of the Secondary MCL for manganese in the receiving water.

See also response to CSPA Comment No. 6 regarding the use of annual averages for implementation of secondary MCLs.

CSPA Comment No. 14. The proposed Permit fails to include an Effluent for Methylene blue active substances (MBAS) as required by Federal Regulations 40 CFR 122.44 and the permit should not be adopted in accordance with California Water Code Section 13377.

RESPONSE: See response to CSPA Comment No. 13.

CSPA Comment No. 15. The proposed permit contains an inadequate reasonable potential by using incorrect statistical multipliers as required by Federal regulations, 40 CFR § 122.44(d)(1)(ii).

RESPONSE: Until adoption of the SIP by the State Water Board, USEPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD) was the normal protocol followed for permit development for all constituents. The SIP is required only for California Toxics Rule (CTR) and National Toxics Rule (NTR) constituents and prescribes a different protocol when conducting a Reasonable Potential Analysis (RPA), but is identical when developing water quality-based effluent limitations (WQBELs). For some time after SIP adoption, SIP protocols were used for CTR/NTR constituents, and TSD protocols were used for non-CTR/NTR constituents. While neither protocol is necessarily better or worse in every case, using both protocols in the same permit has led to confusion by dischargers and the public, and greater complexity in writing permits. Currently there is no State or Regional Water Board policy that establishes a recommended or required approach to conduct an RPA or establish WQBELs for non-CTR/NTR constituents. However, the State Water Board has held that the Regional Water Board may use the SIP as guidance for water quality-based toxics control. The SIP states in the introduction "*The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency*." Therefore, for consistency in the development of NPDES permits, the Regional Water Board typically uses the RPA procedures from the SIP to evaluate reasonable potential for both CTR/NTR and non-CTR/NTR constituents.